(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 503 735 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **92200660.6**

(51) Int. Cl.5: **B65D 83/14**

(22) Date of filing: **06.03.92**

(30) Priority: **07.03.91 NL 9100406**

(43) Date of publication of application:
16.09.92 Bulletin 92/38

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB IT LI NL PT

(71) Applicant: **PLASTICUM B.V.**
Zevenheuvelenweg 9
NL-5048 AN Tilburg(NL)

(72) Inventor: **Clijsen, Petrus Wilhelmus Cornelis**
P. Bruegellaan 18
NL- 5056 CC Berkel-Enschot(NL)
Inventor: **Keldenich, Jacques Eduard**
Harpdreef 12
NL-4876 ZX Etten-Leur(NL)

(74) Representative: **Vollebregt, Cornelis Jacobus**
Algemeen Octroolbureau P.O. Box 645
NL-5600 AP Eindhoven(NL)

(54) A combination of an aerosol can and a cap placed on said aerosol can.

(57) The invention relates to a combination of an aerosal can (11) and a cap (1) placed on said aerosol can, said cap being provided with a shell (3), which engages under a collar located near the upper side of the aerosol can by means of at least one locking lip located near the open bottom end of said shell. An operating arm (7) is coupled to the shell, by means of which a valve (16), forming part of the aerosol can, can be actuated so as to discharge the contents of the aerosol can. At the inner side of the shell a wing (19) is secured to a part of the shell (3) which can be pressed inwards with respects to the other part of the shell, said wing at its side remote from the shell abutting against a part of the aerosol can and in the unloaded condition of the part of the shell carrying the wing co-operating with the operating arm so as to prevent the operating arm from moving so as to open the valve. The construction is such that when the part of the shell carrying the wing is depressed the end of the wing abutting against a part of the aerosol can will be pivoted, while moving along this part of the aerosol can, about a pivot axis extending at least substantially parallel to the central axis (2) of the aerosol can, into a position in which the wing allows a pivoting motion of the operating arm.

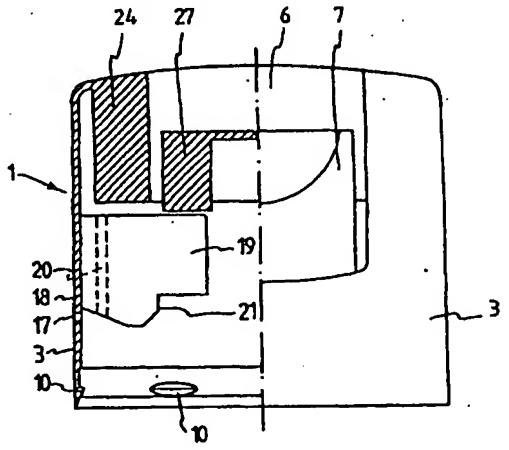

Fig 6

EP 0 503 735 A1

The invention relates to a combination of an aerosol can and a cap placed on said aerosol can, said cap being provided with a shell, which engages under a collar located near the upper side of the aerosol can by means of at least one locking lip located near the open bottom end of said shell, whilst an operating arm is coupled to the shell, by means of which a valve, forming part of the aerosol can, can be actuated so as to discharge the contents of the aerosol can.

Such combinations of aerosol cans and caps are generally known. It is true that with such a combination it is difficult to remove the cap from the aerosol can, especially for children, but the aerosol can can be used without impediment for discharging the contents of the aerosol can by actuating the operating arm. In view of the contents of the aerosol can, however, it is often desirable to prevent as well as possible the unqualified use of the aerosol can, in particular by children.

According to the invention this can be achieved in that at the inner side of the shell a wing is secured to a part of the shell which can be pressed inwards with respect to the other part of the shell, said wing at its side remote from the shell abutting against a part of the aerosol can and in the unloaded condition of the part of the shell carrying the wing co-operating with the operating arm so as to prevent the operating arm from moving so as to open the valve, the construction being such that when the part of the shell carrying the wing is depressed the end of the wing abutting against a part of the aerosol can will be pivoted, while moving along this part of the aerosol can, about a pivot axis extending at least substantially parallel to the central axis of the aerosol can, into a position in which the wing allows a pivoting motion of the operating arm.

When using such a combination of an aerosol can and a cap placed on the aerosol can it is therefore not only necessary to actuate the operating arm in order to discharge the contents of the aerosol can, but also to exert a force on a certain part of the shell of the cap carrying the wing, so as to make it possible for the operating arm to move and the for the valve of the aerosol can to open. In this manner it is possible with the construction according to the invention to achieve a combination of an aerosol can and a cap placed on the aerosol can which is in particular protected from unqualified use by children, whilst yet retaining a comparatively simple construction of the cap.

The invention will be explained in more detail hereafter with reference to an embodiment of the construction according to the invention illustrated in the accompanying Figures.

Figure 1 is a side view of a cap for an aerosol can according to the invention.

Figure 2 is a side view of Figure 1, seen according to the arrow II in Figure 1.

Figure 3 is a plan view of the cap shown in Figures 1 and 2.

Figure 4 is a bottom view of the cap shown in Figures 1 and 2.

Figure 5 is a sectional view of Figure 3, along the line V-V in Figure 3.

Figure 6 is a sectional view of Figure 4, along the line VI-VI in Figure 4.

Figures 7 - 9 are diagrammatic bottom views of the cap, illustrating various positions of the wing, which is connected to the movable part of the shell.

Figure 10 diagrammatically shows the upper end of an aerosol can.

The cap 1 for an aerosol can shown in the Figures is provided in the usual manner with a shell 3 which extends concentrically about the central axis 2 of the cap, an upper wall 4 joining the upper end of said shell.

An at least substantially U-shaped recess is provided in the upper wall, whilst a U-shaped boundary wall, which extends downwards from the upper wall 4, joins the edges of said recess, said boundary wall being built up of two legs 5, extending at least substantially parallel to each other, and a connecting piece 6 connecting said two legs 5. The ends of the legs 5 remote from the connecting piece 6 join the shell 3 near a recess formed in the shell. As furthermore appears in particular from Figure 5 the U-shaped wall 5, 6 extends downwards from the upper along substantially less than half the height of the cap, whilst an operating arm 7 is located in a U-shaped recess bounded by said wall 5, 6, said recess being open at one side of the cap. The operating arm 7 is integral with other parts of the cap, which is made of plastic material, and is thereby connected to the bottom end of the connecting piece 6 with a connecting rib 8 forming a hinge.

In the illustrated embodiment the operating lever 7 has an at least substantially U-shaped section, whilst the operating lever 7 furthermore has a hole 9 for accommodating the discharge part of the valve of an aerosol can.

As furthermore appears in particular from Figures 5 and 6 the bottom end of the shell 3 of the cap is thinner than the other part of the cap 1, whilst a plurality of inwardly extending locking lips 10 are provided on the inner circumference of said bottom end.

Insofar as described in the above the cap is of conventional construction and is suitable fro being mounted on an aerosol can 11 of the type shown in Figure 10. Such an aerosol can usually has a curl 13 at the upper end of its cylindrical shell 12, which forms the attachment between the upper end of the shell 12 and a more or less dome-shaped

cover 14 closing the aerosol can at its upper end. Usually a valve mechanism 16 is mounted on the upper end of said dome-shaped cover 14 by means of a curl connection 15, via which valve mechanism the contents of the aerosol can can be discharged.

The above-discussed cap may be placed on the upper end of the aerosol can 11, whereby the locking lips 10 snap under the curl 13, thus providing a secure attachment of the cap on the aerosol can 11. The upper end of the valve mechanism 16 will thereby come to lie in the hole 9 of the operating lever 7. When a downwardly directed pressure is exerted on the end of the operating lever 7 remote from the connecting rib 8 of the operating lever 7, the valve mechanism 16 will be opened and the contents of the aerosol can 11 can flow out of the aerosol can via the valve

In the above a certain embodiment of the operating lever and the valve mechanism to be actuated by means of the operating lever is described and illustrated in the Figures, but it will be apparent for those skilled in the art that also other embodiments of operating levers and valve mechanisms matched for each other may be used.

As appears in particular from Figure 1 a U-shaped gap 17 is provided in a part of the shell 3 of the cap extending at least substantially parallel to the wall parts 5 of the recess accommodating the operating lever 7, so that a lip 18 is formed in the shell 3 of the cap 1, which is only connected to the remaining part of the shell 3 near its upper end. In the inside of the cap one end of a wing 19 is secured to the lip 18. Said wing 19 extends parallel to a plane extending through the central axis 2 of the cap. The end of the wing 19 joining the lip 18 is thereby secured to the lip near the centre of the lip. At a short distance from the connection of the wing 19 to the lip 18 a groove 20, which extends parallel to the central axis of the cap, is formed in the wing. The lower boundary edge of the wing 19 is profiled, in such a manner that the part of the wing joining the lip 18 projects under the free end of the lip and thus a stop shoulder 21 located at some distance from the free end of the wing and extending parallel to the central axis 2 of the cap is formed, for a purpose to be described in more detail hereafter.

As furthermore appears from Figures 4 and 7 -9 a slot 22, extending parallel to the central axis of the cap, is formed in the wall part 5 located closest to the lip 18, two wall parts 23 and 24, extending parallel to each other, joining the boundary edges of said slot 22, said wall parts extending from the wall part 5 in the direction of the lip 18. Near the slot 22 a similar slot 25 (Figure 9) is provided in the side wall of the operating lever 7 extending parallel to the wall part 5. Wall parts 26 and 27 extending in line with the wall parts 23 and 24 join the boundary edges of said slot 25, said wall parts 26 and 27 extending from the boundary edges of the slot 25 in a direction remote from the wall parts 23 and 24 and being interconnected by a connecting rib 28 at their ends remote from the slot 25.

As appears in particular from Figures 4 and 7, in the unloaded condition the wing 19 is positioned in line with the slot bounded by the wall parts 23, 24 and 26, 27 and, as appears from Figure 6, under the lower boundary edges of the operating arm 7 located near the wing 19 and the wall parts 23, 24, 26 and 27 in question. As a result of this construction it is possible to fabricate the above-described cap illustrated in the Figures in one piece in a mould, e.g. by injection moulding, from plastic material, so that a fast production of the cap can be ensured, no separate parts need to be attached to the cap and thus no parts of the cap can be lost.

As is also apparent from the Figures thereby, the wing 19 includes an acute angle with the plane extending through the central axis 2 of the cap and the connecting point of the wing to the lip 18.

When the cap is placed in a usual manner on the upper end of an aerosol can of e.g. the type shown in Figure 10, the stop shoulder 21 of the wing will come into contact with the outer circumference of the curl 15, as a result of which the wing 19 will be pushed from the position shown in Figures 4 and 7 into the position shown in Figure 8, in which the upper boundary edge 19 of the wing will come to lie beside the gap bounded by the wall parts 26 and 27, just below the lower boundary edge of the operating lever 7, as is shown in Figure 6. In this position the wing 19 prevents the lever 7 from being depressed so as to actuate the valve mechanism 16.

When a downwardly directed force is exerted on the lip 18 near the outer side of the cap 1, the lip 18 will pivot with respect to the other part of the cap 1, about an imaginary pivot axis located near the connecting line between the upper ends (when seen in Figure 1) of the legs of the gap 17. When the lip 18 is pressed towards the inside in this manner the stop shoulder 21 of the wing 19 is forced to move along the outer circumference of the curl 15, as a result of which the wing 19 will pivot about an imaginary pivot axis Located near the groove 20 formed in the wing 19, from the position shown in Figure 8 into the position shown in Figure 9. In this position of the wing 19 shown in Figure 9 the wing is located near a recess 29, which is provided in the side wall of the operating lever 7 located above the wing. In this position the operating lever 7 can be pivoted downwards so as to actuate the valve mechanism 16, whereby the upper end of the wing 19 is received in the recess

29 of the operating lever. It will be apparent that instead of providing a recess 29 in the operating arm 7 it will also be possible to provide a relevant recess in the upper part of the wing 19, whereby in that case the side wall of the operating arm 7 will be received in said recess when the operating arm 7 is pressed down.

When the operating lever 7 is released again it will pivot back into its starting position in a usual manner. When the lip 18 is released as well it will pivot back as a result of the inherent resilience of the material of which the cap is made, as a result of which also the wing 19 will return to the position of said wing shown in Figure 8, and thus the operating arm 7 is again locked against being pivoted downwards.

In order to operate the aerosol can it is therefore necessary first to press the actuating lip 18 inwards with respect to the other part of the cap and then to depress the operating arm 7. The selected arrangement of the parts makes it possible to carry this out with one hand, actuating the lip 18 with the thumb and the operating lever with the index finger.

By using the construction according to the invention a closure of an aerosol can which is at least safe for children can be realised by means of a cap placed on the aerosol can, whilst it is also possible to make such a cap in one piece.

Claims

1. A combination of an aerosal can and a cap placed on said aerosol can, said cap being provided with a shell, which engages under a collar located near the upper side of the aerosol can by means of at least one locking lip located near the open bottom end of said shell, whilst an operating arm is coupled to the shell, by means of which a valve, forming part of the aerosol can, can be actuated so as to discharge the contents of the aerosol can, characterized in that at the inner side of the shell a wing is secured to a part of the shell which can be pressed inwards with respect to the other part of the shell, said wing at its side remote from the shell abutting against a part of the aerosol can and in the unloaded condition of the part of the shell carrying the wing cooperating with the operating arm so as to prevent the operating arm from moving so as to open the valve, the construction being such that when the part of the shell carrying the wing is depressed the end of the wing abutting against a part of the aerosol can will be pivoted, while moving along this part of the aerosol can, about a pivot axis extending at least substantially parallel to the central axis of the aerosol can, into a position in which the wing allows a pivoting motion of the operating arm.

2. A combination according to claim 1, characterized in that the cap is integral with the operating arm and the wing and that, when seen in the direction of the central axis of the cap, in the unloaded condition the wing is located between two wall parts associated with the operating lever which extend parallel to the wing.

3. A combination according to claim 1 or 2, characterized in that, when seen in the direction of the central axis of the cap, in the unloaded condition the wing is located between two wall parts extending parallel to the wing, said wall parts extending from a wall part that bounds a space accommodating the operating arm in the head, in the direction of the part of the shell carrying the wing.

4. A combination according to any one of the preceding claims, characterized in that in the wing, near its connection to the shell, a groove is provided, which extends at least substantially parallel to the central axis of the cap.

5. A combination according to any one of the preceding claims, characterized in that the part of the shell carrying the wing is only connected to the other part of the shell along a boundary line.

6. A combination according to any one of the preceding claims, characterized in that the lower boundary edge of the wing is profiled in such a manner, that a part of the lower boundary edge extends over a curl of the can and that a further part of the boundary edge joining said part abuts against the outer circumference of the curl.

7. A cap obviously intended for use with a combination according to any one of the preceding claims.

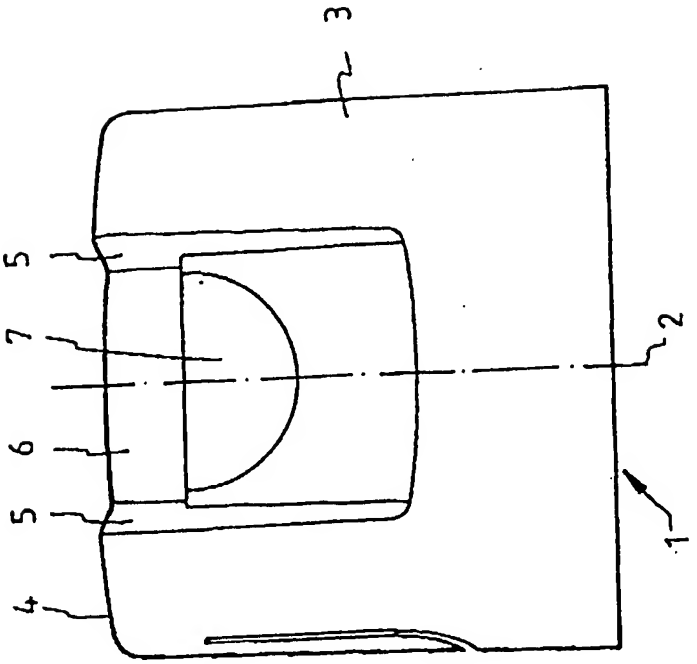

Fig 2

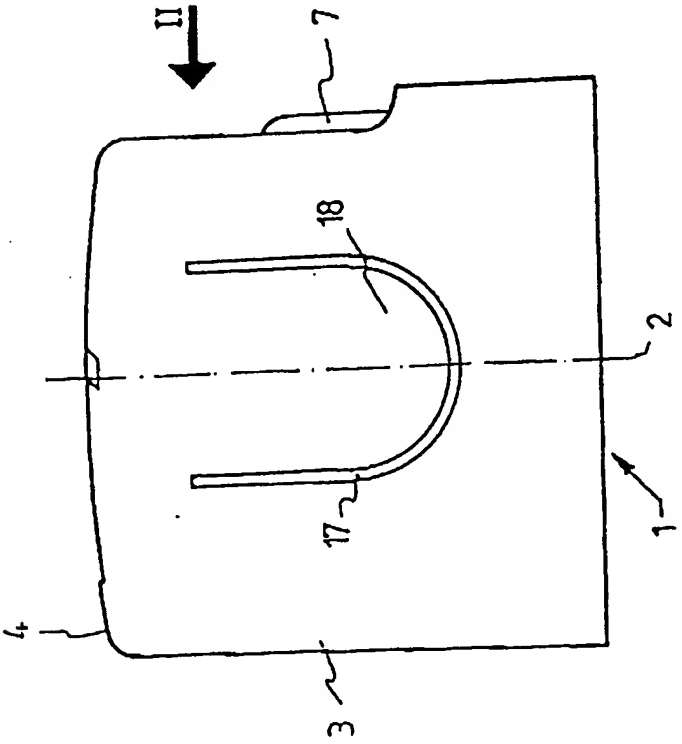

Fig 1

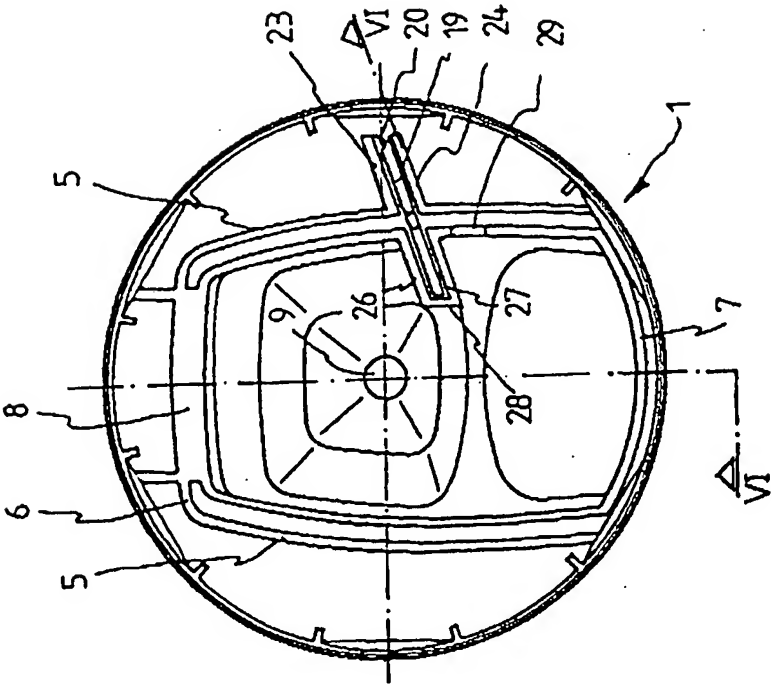

Fig 4

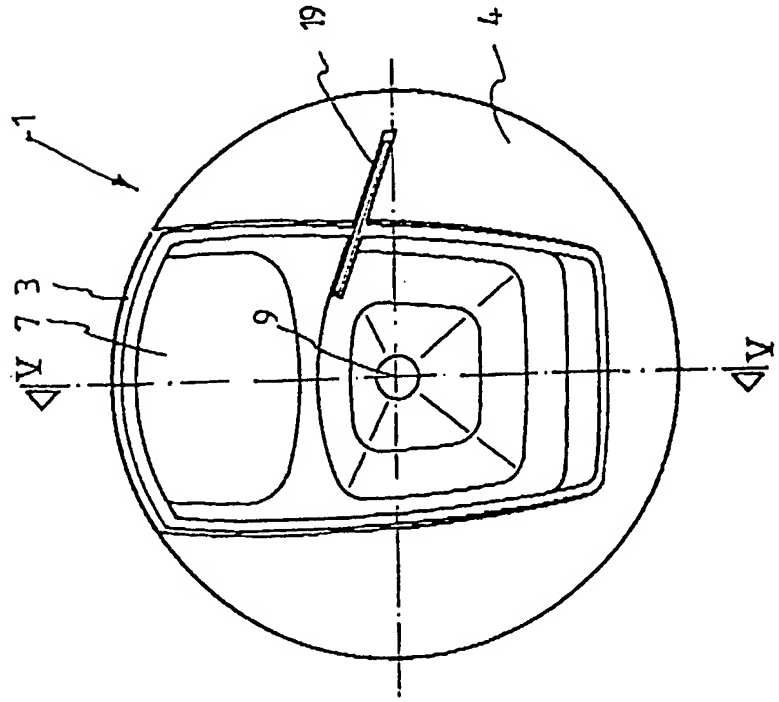

Fig 3

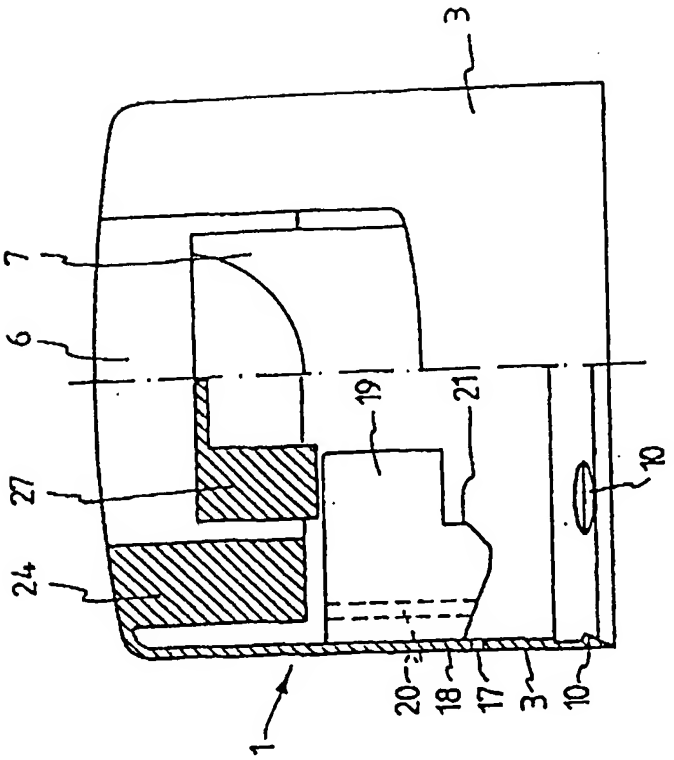

Fig 6

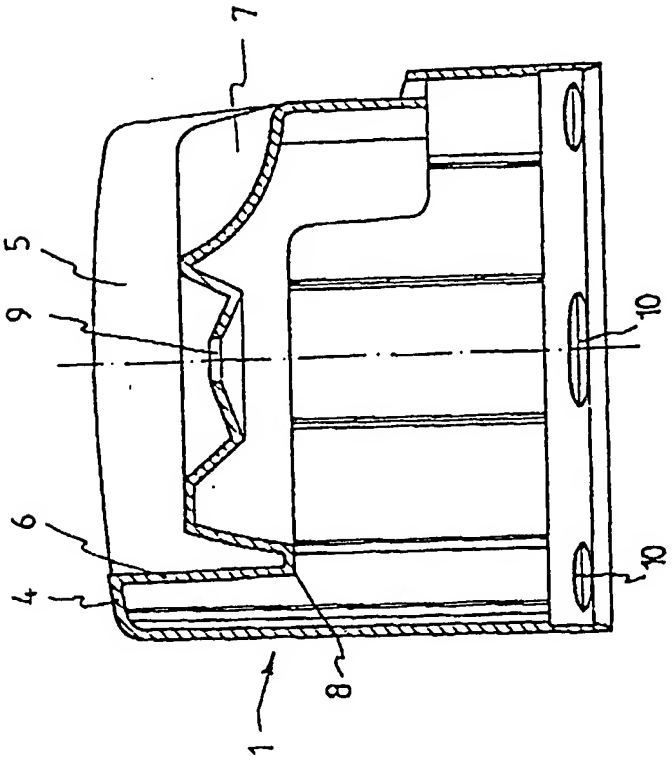

Fig 5

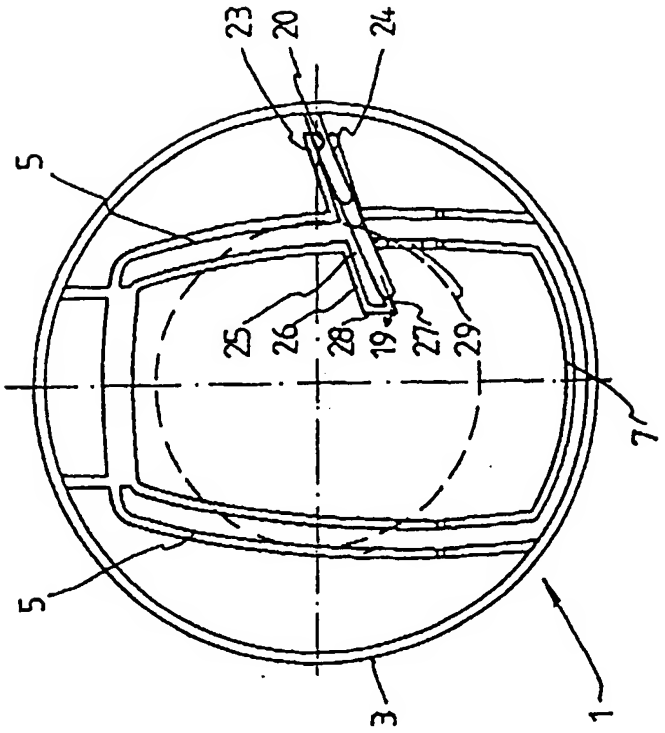

Fig 8

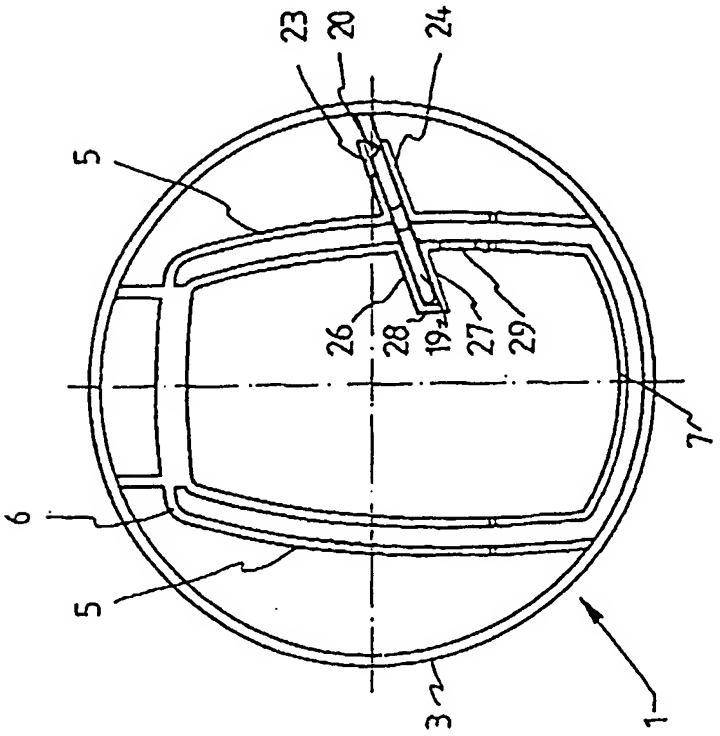

Fig 7

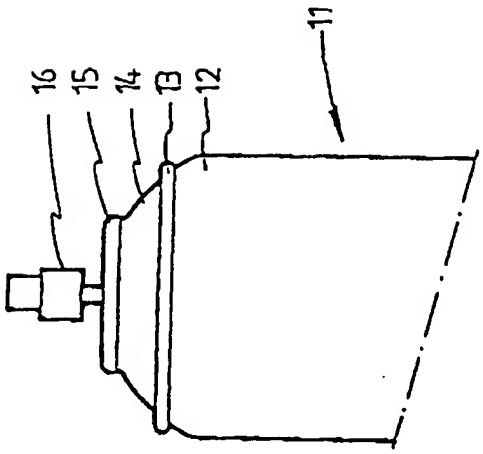

Fig 10

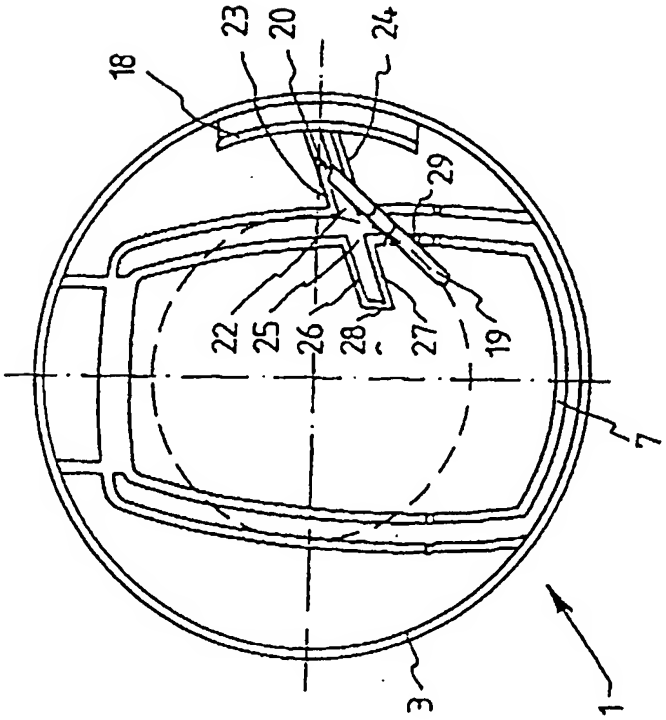

Fig 9

European Patent Office

PARTIAL EUROPEAN SEARCH REPORT

which under Rule 45 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number

EP 92 20 0660

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	FR-A-2 226 330 (PITTWAY) * Page 3, line 16 - page 4, line 28; claims 6,7; figure 15 *	1	B 65 D 83/14
A	FR-A-2 548 628 (THOMAS JOHN) * Page 3, lines 23-26; claim 1; figures 1,2 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 65 D

INCOMPLETE SEARCH

The Search Division considers that the present European patent application does not comply with the provisions of the European Patent Convention to such an extent that it is not possible to carry out a meaningful search into the state of the art on the basis of some of the claims

Claims searched completely :

Claims searched incompletely :

Claims not searched : 7

Reason for the limitation of the search:

Claim 7 is considered obscure as to its technical disclosure (Rule 29, (6) EPC).

Place of search	Date of completion of the search	Examiner
THE HAGUE	25-06-1992	ANDEREGG P-Y.F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0607)